NEC

Portable Projector

VT695/VT595/VT590/VT490/VT59/VT49

User's Manual

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(4) Notwithstanding article (3), NEC will not be responsible for any claims on loss of profit or other matters deemed to result from using the Projector.

Important Information

Safety Cautions

Precautions

Please read this manual carefully before using your NEC VT695/VT595/VT590/VT490/VT59/VT49 projector and keep the manual handy for future reference. Your serial number is located on the bottom of your projector. Record it here:

CAUTION

To turn off main power, be sure to remove the plug from power outlet.
The power outlet socket should be installed as near to the equipment as possible, and should be easily accessible.

CAUTION

TO PREVENT SHOCK, DO NOT OPEN THE CABINET.
THERE ARE HIGH-VOLTAGE COMPONENTS INSIDE.
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

This symbol warns the user that uninsulated voltage within the unit may be sufficient to cause electrical shock. Therefore, it is dangerous to make any kind of contact with any part inside of the unit.

This symbol alerts the user that important information concerning the operation and maintenance of this unit has been provided.
The information should be read carefully to avoid problems.

WARNING: TO PREVENT FIRE OR SHOCK, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE.
DO NOT USE THIS UNIT'S PLUG WITH AN EXTENSION CORD OR IN AN OUTLET UNLESS ALL THE PRONGS CAN BE FULLY INSERTED.

DOC Compliance Notice (for Canada only)

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Machine Noise Information Regulation - 3. GPSGV,

The highest sound pressure level is less than 70 dB (A) in accordance with EN ISO 7779.

CAUTION

Avoid displaying stationary images for a prolonged period of time.

Doing so can result in these images being temporarily sustained on the surface of the LCD panel.

If this should happen, continue to use your projector. The static background from previous images will disappear.

Disposing of your used product

EU-wide legislation as implemented in each Member State requires that used electrical and electronic products carrying the mark (left) must be disposed of separately from normal household waste. This includes projectors and their electrical accessories or lamps. When you dispose of such products, please follow the guidance of your local authority and/or ask the shop where you purchased the product.
After collecting the used products, they are reused and recycled in a proper way. This effort will help us reduce the wastes as well as the negative impact such as mercury contained in a lamp to the human health and the environment at the minimum level.
The mark on the electrical and electronic products only applies to the current European Union Member States.

WARNING TO CALIFORNIA RESIDENTS:

Handling the cables supplied with this product will expose you to lead, a chemical known to the State of California to cause birth defects or other reproductive harm. *WASH HANDS AFTER HANDLING*.

RF Interference (for USA only)

WARNING

The Federal Communications Commission does not allow any modifications or changes to the unit EXCEPT those specified by NEC Corporation of America in this manual. Failure to comply with this government regulation could void your right to operate this equipment. This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio / TV technician for help.

For UK only: In UK, a BS approved power cable with moulded plug has a Black (five Amps) fuse installed for use with this equipment. If a power cable is not supplied with this equipment please contact your supplier.

Important Safeguards

These safety instructions are to ensure the long life of your projector and to prevent fire and shock. Please read them carefully and heed all warnings.

⚠ Installation

- Do not place the projector in the following conditions:
  - on an unstable cart, stand, or table.
  - near water, baths, or damp rooms.
  - in direct sunlight, near heaters, or heat radiating appliances.
  - in a dusty, smoky or steamy environment.
  - on a sheet of paper or cloth, rugs or carpets.
- If you wish to have the projector installed on the ceiling:
  - Do not attempt to install the projector yourself.
  - The projector must be installed by qualified technicians in order to ensure proper operation and reduce the risk of bodily injury.
  - In addition, the ceiling must be strong enough to support the projector and the installation must be in accordance with any local building codes.
  - Please consult your dealer for more information.

Place the projector in a horizontal position

The tilt angle of the projector should not exceed 10 degrees, nor should the projector be installed in any way other than the desktop and ceiling mount, otherwise lamp life could decrease dramatically.

Fire and Shock Precautions

- Ensure that there is sufficient ventilation and that vents are unobstructed to prevent the build-up of heat inside your projector. Allow at least 4 inches (10cm) of space between your projector and a wall.
- Do not try to touch the ventilation outlet on the left front (when seen from the front) as it can become heated while the projector is turned on and immediately after the projector is turned off.
- Prevent foreign objects such as paper clips and bits of paper from falling into your projector. Do not attempt to retrieve any objects that might fall into your projector. Do not insert any metal objects such as a wire or screwdriver into your projector. If something should fall into your projector, disconnect it immediately and have the object removed by a qualified service personnel.
- Do not place any objects on top of the projector.
- Do not touch the power plug during a thunderstorm. Doing so can cause electrical shock or fire.
- The projector is designed to operate on a power supply of 100-240V AC 50/60 Hz. Ensure that your power supply fits this requirement before attempting to use your projector.
- Do not look into the lens while the projector is on. Serious damage to your eyes could result.
- Keep any items such as magnifying glass out of the light path of the projector. The light being projected from the lens is extensive, therefore any kind of abnormal objects that can redirect light coming out of the lens, can cause unpredictable outcome such as fire or injury to the eyes.
- Do not cover the lens with the black lens cap or equivalent while the projector is on. Doing so can lead to melting of the cap and possibly burning your hands due to the heat emitted from the light output.
- Do not place any objects, which are easily affected by heat, in front of the projector lens or a projector exhaust vent. Doing so could lead to the object melting or getting your hands burned from the heat that is emitted from the light output and exhaust.
- Handle the power cable carefully. A damaged or frayed power cable can cause electric shock or fire.
  - Do not use any power cables than the supplied one.
  - Do not bend or tug the power cable excessively.
  - Do not place the power cable under the projector, or any heavy object.
  - Do not cover the power cable with other soft materials such as rugs.
  - Do not heat the power cable.
  - Do not handle the power plug with wet hands.
- Turn off the projector, unplug the power cable and have the object removed by a qualified NEC service personnel under the following conditions:
  - When the power cable or plug is damaged or frayed.
  - If liquid has been spilled into the projector, or if it has been exposed to rain or water.
  - If the projector does not operate normally when you follow the instructions described in this user's manual.
  - If the projector has been dropped or the cabinet has been damaged.
  - If the projector exhibits a distinct change in performance, indicating a need for service.
  - If the projector is not to be used for an extended period of time.
- Disconnect the power cable and any other cables before carrying the projector.
- Turn off the projector and unplug the power cable before cleaning the cabinet or replacing the lamp.

CAUTION

- Do not use the tilt-foot for purposes other than originally intended. Misuses such as gripping the tilt-foot or hanging on the wall can cause damage to the projector.
- Do not send the projector in the soft case by parcel delivery service or cargo shipment. The projector inside the soft case could be damaged.
- When carrying the projector by the carrying handle, make sure the two screws that attach the carrying handle to the projector cabinet are tight.

  Insufficient tightening of the two screws could result in the projector falling and causing injury.
- Select [High] in Fan mode if you continue to use the projector for consecutive days. (From the menu, select [Setup] → [Options] → [Fan Mode] → [High].)
- Do not turn off the AC power by pressing the main power switch or by unplugging the power cable when the projector is powered on.
- Do not turn off the AC power for 60 seconds after the lamp is turned on and while the POWER indicator is blinking green. Doing so could cause premature lamp failure.

Remote Control Precautions

- Handle the remote control carefully.
- If the remote control gets wet, wipe it dry immediately.
- Avoid excessive heat and humidity.
- Do not heat, take apart, or throw batteries into fire.
- If you will not be using the remote control for a long time, remove the batteries.
- Ensure that you have the batteries' polarity (+/-) aligned correctly.
- Do not use new and old batteries together, or use different types of batteries together.
- Dispose of used batteries according to your local regulations.

Lamp Replacement

- To replace the lamp, follow all instructions provided on page 52.
- Be sure to replace the lamp when the message **[The lamp has reached the end of its usable life. Please replace the lamp.]** appears. If you continue to use the lamp after the lamp has reached the end of its usable life, the lamp bulb may shatter, and pieces of glass may be scattered in the lamp case. Do not touch them as the pieces of glass may cause injury.

  If this happens, contact your dealer for lamp replacement.

A Lamp Characteristic

The projector has a high-pressure mercury lamp as a light source.
A lamp has a characteristic that its brightness gradually decreases with age. Also repeatedly turning the lamp on and off will increase the possibility of its lower brightness.

⚠ CAUTION:

When removing the lamp from a ceiling-mounted projector, make sure that no one is under the projector. Glass fragments could fall if the lamp has been burned out.

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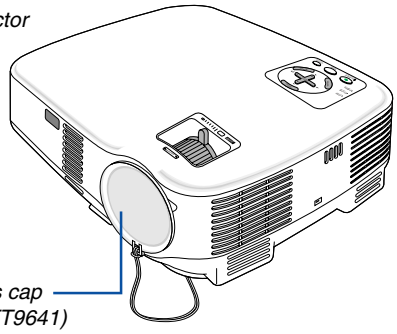
1. Introduction

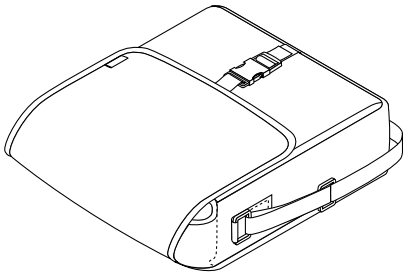
❶ What's in the Box?

Make sure your box contains everything listed. If any pieces are missing, contact your dealer.
Please save the original box and packing materials if you ever need to ship your projector.

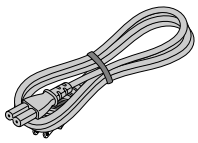
Projector



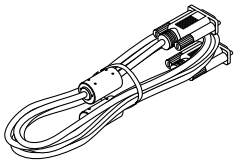
Lens cap
(24FT9641)



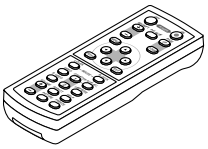
Soft case
(24BS7582)



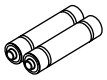
Power cable
(US: 7N080220)
(EU: 7N080015)



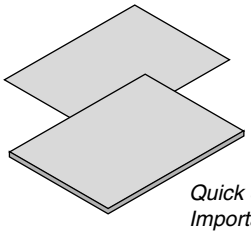
VGA signal cable
(7N520052)



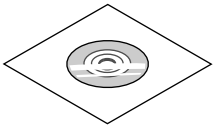
Remote control
(7N900731)



Batteries (AAA×2)



Quick Setup Guide
Important Information

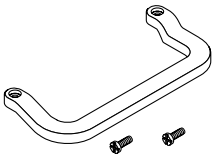


CD-ROM
User's manual

For North America only
Registration card
Limited warranty

For Europe only
Guarantee policy

For VT695, VT595, VT590 and VT490 only



Carrying handle (24FT9651)
Screw (M4×2: 24V00411)

For VT695 and VT595 only

DVI to VGA adapter (7N960231)

❷ Introduction to the Projector

This section introduces you to your new projector and describes the features and controls.

Congratulations on Your Purchase of the Projector

This projector is one of the very best projectors available today. The projector enables you to project precise images up to 300 inches across (measured diagonally) from your PC or Macintosh computer (desktop or notebook), VCR, DVD player, document camera, or a laser disc player.
You can use the projector on a tabletop or cart, you can use the projector to project images from behind the screen, and the projector can be permanently mounted on a ceiling*1. The remote control can be used wirelessly.

*1 Do not attempt to mount the projector on a ceiling yourself.

The projector must be installed by qualified technicians in order to ensure proper operation and reduce the risk of bodily injury.

In addition, the ceiling must be strong enough to support the projector and the installation must be in accordance with any local building codes. Please consult your dealer for more information.

Features you'll enjoy:

- Auto vertical keystone correction up to +/– 30 degrees (VT695 and VT595 only)
- Built-in Wall Color Correction presets provide for adaptive color correction when projecting onto non-white screen material
- Quick start & quick cool down

  Eight seconds after turning on the power, the projector is ready to display PC or video images.

  Powering down; The fans stop 30 seconds after turning off the power from the remote control or cabinet control panel. The projector can be put away immediately after the projector is powered down.

  Also, the main power of the projector can be turned off by pressing the main power switch or unplugging the power cable even during the cool down period after the projector is turned off.
- DVI input connector (DVI-I 29 Pin) with HDCP compatible (VT695 and VT595 only)
- HDTV (1080i, 720p) and SDTV (576p, 480p) compatibility
- Color Management system
- Short focal length lens
- Display popular wide screen and full screen aspect ratios – 16:9 and 4:3
- Built-in speaker for an integrated audio solution
- High resolution display - up to UXGA compatible, XGA native resolution (SVGA: VT490 and VT49).
- Multiple video mode selections (depending on your source)
- Security feature prevents unauthorized individuals from displaying images.
- You can control the projector with a PC or control system using the PC Control port.
- Easy set up and operation
- The contemporary cabinet design is light, compact and complements any office, boardroom Auditorium.
- You can use the supplied wireless remote control and the optional remote mouse receiver to operate your PC mouse from across the room. The optional remote mouse receiver (NP01MR) supports almost any PC using a USB connection.

About this user's manual

The fastest way to get started is to take your time and do everything right the first time. Take a few minutes now to review the user's manual. This may save you time later on. At the beginning of each section of the manual you'll find an overview. If the section doesn't apply, you can skip it.

Adjusting White Balance [White Balance]

This allows you to adjust the white balance. Contrast for each color (RGB) to adjust the white level of the screen; Brightness for each color (RGB) is used to adjust the black level of the screen.

Adjusting Contrast, Brightness, Sharpness, Color and Hue

You can adjust contrast, brightness, sharpness, color and hue.

Contrast ..... Adjusts the intensity of the image according to the incoming signal (White level of the image).

Brightness ..... Adjusts the brightness level or the black level of the image.

Sharpness ..... Controls the detail of the image for Video (not valid for RGB).

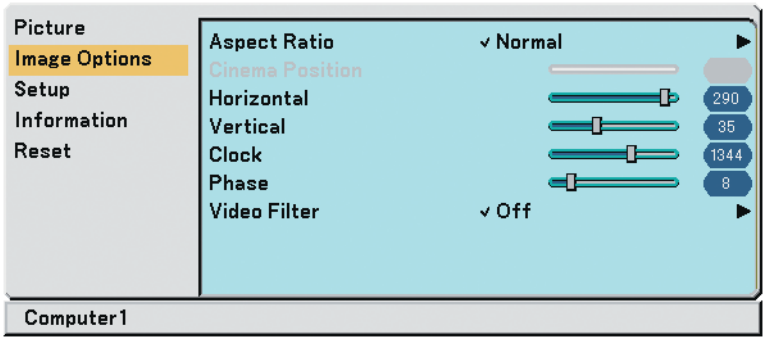
Color ..... Increases or decreases the color saturation level (not valid for RGB).

Hue ..... Varies the color level from +/- green to +/-blue. The red level is used as reference. This adjustment is only valid for Video and Component inputs (not valid for RGB).

Reset

The settings and adjustments for [Picture] will be returned to the factory settings with the exception of the following; Preset numbers and [Reference] within the [Preset] screen.
The settings and adjustments under [Detail Settings] within the [Preset] screen that are not currently selected will not be reset.

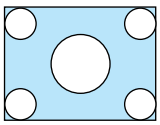
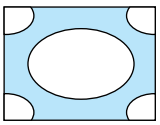
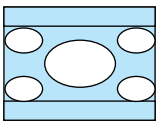
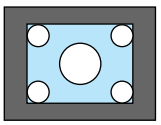
❺ Menu Descriptions & Functions [Image Options]



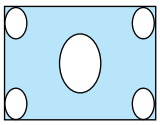
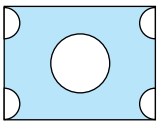
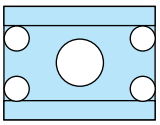
Selecting Aspect Ratio [Aspect Ratio]

Aspect Ratio allows you to select the best Aspect mode to display your source image.
You can also display the Aspect Ratio menu by pressing the ASPECT button on the remote control.

When 4:3 is selected from the source (i.e. DVD player), the following selections will display:

Normal	*Wide Zoom*	*Cinema*	*Native*
			
Standard 4:3 Aspect	*Left and right stretched*	*Left and right stretched*	

When 16:9 is selected from the source (i.e. DVD player), the following selections will display:

Normal	*Wide Zoom*	*Cinema*
		
16:9 image displayed in 4:3 mode	*Left and right stretched*	*Left and right stretched to display the true aspect*

Native (RGB only): Turns off the scaling feature. The projector displays the current image in its true resolution.

NOTE:

- *When you are displaying an RGB image with a higher resolution than the projector's native resolution, the image will be displayed in the projector's native resolution. In this case [Native] is not available from the menu.*
  Only when displaying an RGB image with a lower resolution than the projector's native resolution, will the image be able to be displayed in its true resolution [Native].
- *When Computer 2 (Digital) is selected, some options of Aspect Ratio are not available depending on the signal.*
- *You can adjust the image position for Cinema aspect. See [Cinema Position] for setting the image position.*

Copyright

Please note that using this projector for the purpose of commercial gain or the attraction of public attention in a venue such as a coffee shop or hotel and employing compression or expansion of the screen image with a [Aspect Ratio] setting may raise concern about the infringement of copyrights which are protected by copyright law.

Adjusting the Vertical Position of Image [Cinema Position] (for Cinema only)

This feature adjusts the vertical position of the image when viewing video with Cinema aspect ratio selected. When [Cinema] is selected in [Aspect Ratio], the image is displayed with black borders on the top and bottom. You can adjust the vertical position from the top to the bottom of the black area.

NOTE: This option is available only when [Cinema] is selected in [Aspect Ratio].

Adjusting Horizontal/Vertical Position, Clock and Phase [Horizontal/Vertical/Clock/Phase] (available for RGB signal only)

You can adjust the image manually for position and stability; [Horizontal], [Vertical], [Clock] and [Phase].

[Horizontal/Vertical]

Adjusts the image location horizontally and vertically.

[Clock]

Use this item to fine tune the computer image or to remove any vertical banding that might appear. This function adjusts the clock frequencies that eliminate the horizontal banding in the image. This adjustment may be necessary when you connect your computer for the first time.

[Phase]

Use this item to adjust the clock phase or to reduce video noise, dot interference or cross talk. (This is evident when part of your image appears to be shimmering.)
Use [Phase] only after the [Clock] is complete.

NOTE:
A projected image may not be displayed correctly during adjustment of [Clock] or [Phase]. This is normal.

NOTE: The [Horizontal] and [Vertical] options can be adjusted for component signals.

Selecting Video Filter Level [Video Filter] (not available for Digital RGB, Video and S-Video)

Select one of the three levels for reducing video noise: Off, Less or More.

Off ..... The low-pass filter is turned off.
Less ..... The low-pass filter is applied partially.
More ..... The low-pass filter is applied fully.

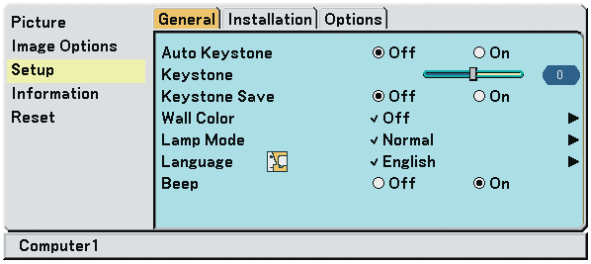
NOTE:

- *Selecting [Off] will give best image quality by way of higher bandwidth. Selecting [Less] will soften the image and selecting [More] will soften the image more.*

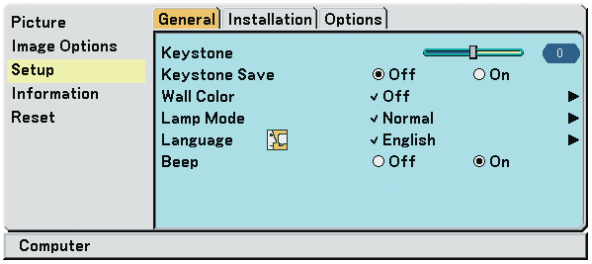
❻ Menu Descriptions & Functions [Setup]

[General]

VT695/VT595



VT590/VT490/VT59/VT49



Enabling Auto Keystone [Auto Keystone] (VT695/VT595 only)

This feature allows the projector to detect its tilt and correct vertical distortion automatically.
To turn on the Auto Keystone feature, select [On].

Correcting Vertical Keystone Distortion Manually [Keystone]

You can correct vertical distortion manually.

Saving Vertical Keystone Correction [Keystone Save]

This option enables you to save your current keystone settings.

Off ..... Does not save current keystone correction settings
On ..... Saves current keystone correction settings

Saving your change once affects all sources. The changes are saved when the projector is off.

NOTE: When [Auto Keystone] is set to [On], [Keystone Save] is not available. Next time you turn on the power, the Auto Keystone function will work and the data stored with [Keystone Save] will be invalid.

Selecting Wall Color Correction Mode [Wall Color]

This function allows for quick adaptive color correction in applications where the screen material is not white.
The following nine options are available: Off, Blackboard, Blackboard (Gray), Light yellow, Light green, Light blue, Sky blue, Light rose and Pink.

Selecting Lamp Mode [Lamp Mode]

This feature enables you to select two brightness modes of the lamp: Normal and Eco modes. The lamp life can be extended by using the Eco mode.

Normal Mode ..... This is the Default setting (100% Brightness).
Eco Mode ..... Select this mode to increase the lamp life (approx. 80% Brightness).
* approx. 75% Brightness: VT695

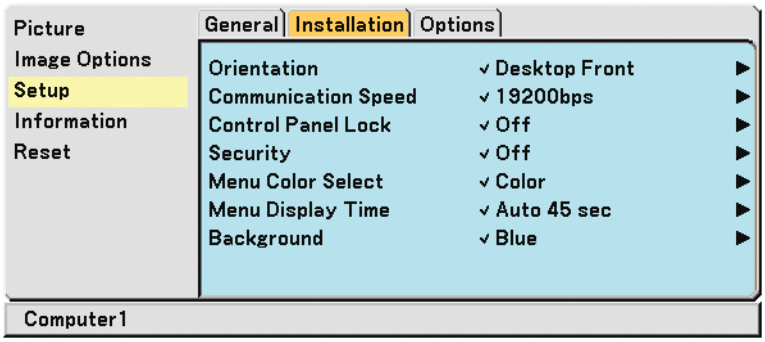
Selecting Menu Language [Language]

You can choose one of 21 languages for the on-screen menu.

Enabling Key Sound and Error Sound [Beep]

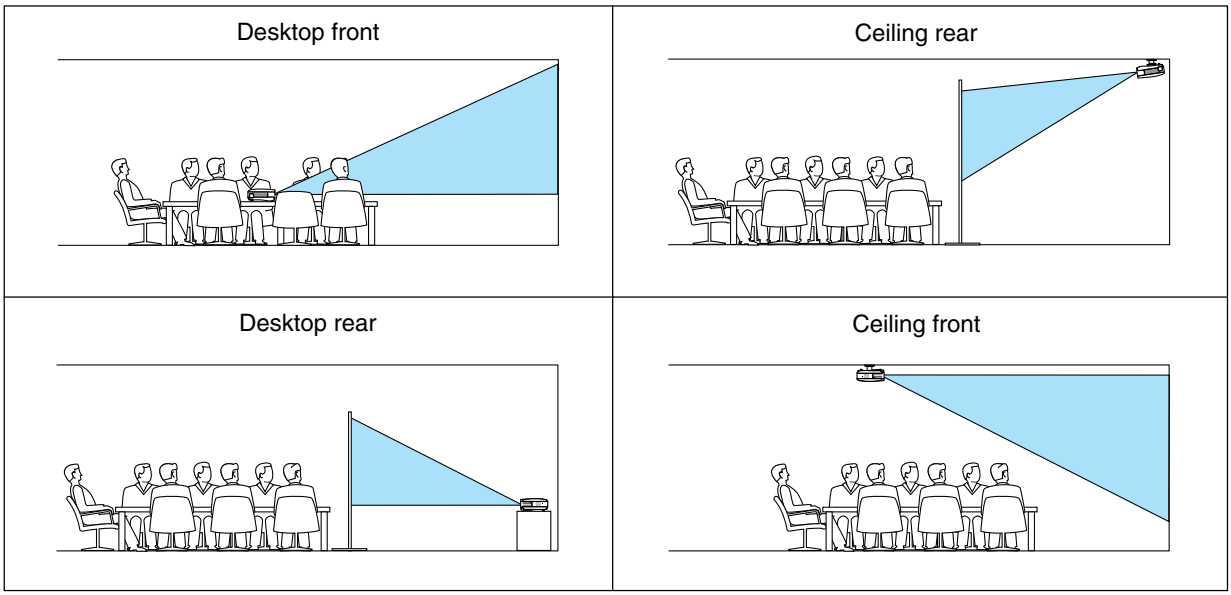
This feature turns on or off the keypad sound or alarm when a button on the cabinet and the remote control is pressed or an error occurs.

[Installation]



Selecting Projector Orientation [Orientation]

This sets your image for your type of projection application. The options are:
desktop front projection, ceiling rear projection, desktop rear projection, and ceiling front projection.



Selecting Communication Speed [Communication Speed]

This feature sets the baud rate of the PC Control port (Mini DIN 8 Pin). It supports data rates from 4800 to 19200 bps. The default is 19200 bps.
Select the appropriate baud rate for your equipment to be connected (depending on the equipment, a lower baud rate may be recommended for long cable runs).
Your selected communication speed will not be affected even when [Reset] is done from the menu.

Disabling the Cabinet Buttons [Control Panel Lock]

This option turns on or off the Key Lock function for cabinet buttons.

NOTE:

- *The Control Panel Lock setting will not affect the remote control or PC Control Functions.*
- *When the cabinet buttons are disabled, pressing and holding the EXIT button on the projector cabinet for about 10 seconds will change the setting to enable.*
- *The Key Lock icon will be displayed at the bottom right of the menu when Control Panel Lock is enabled.*

Enabling Security [Security]

This feature turns on or off the Security function.
Unless the correct keyword is entered, the projector cannot project an image. (→page 31)

Selecting Menu Color [Menu Color Select]

You can choose between two color modes for menu color: color and monochrome.

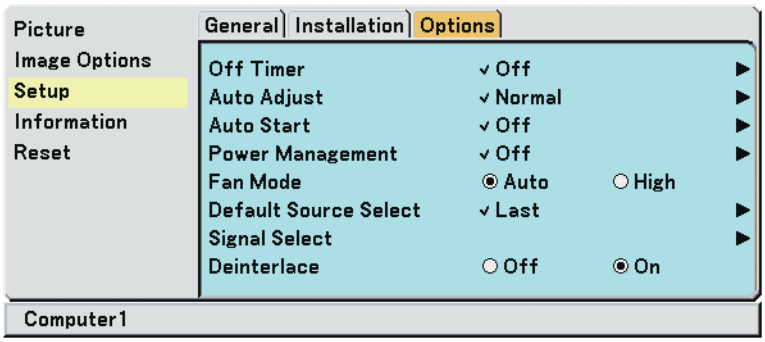
Selecting Menu Display Time [Menu Display Time]

This option allows you to select how long the projector waits after the last touch of a button to turn off the menu.
The preset choices are [Manual], [Auto 5 sec], [Auto 15 sec], and [Auto 45 sec].

Selecting a Color for Background [Background]

Use this feature to display a blue, black or logo when no signal is available.

[Options]



Setting Off Timer [Off Timer]

You can use the Off Timer feature to turn off the projector automatically at a preset time.
Eight preset times can be selected: Off, 0:30, 1:00, 2:00, 4:00, 8:00, 12:00 and 16:00.

Setting Auto Adjust [Auto Adjust]

This feature sets the Auto Adjust mode so that the RGB image can be automatically or manually adjusted for noise and stability. You can automatically make adjustment in two ways: Normal and Fine

Off ..... The RGB image will not be automatically adjusted.
You can manually optimize the RGB image.
Normal ..... Default setting. The RGB image will be automatically adjusted. Normally select this option.
Fine ..... Select this option if fine adjustment is needed. It takes more time to switch to the source than when [Normal] is selected.

Enabling Auto Start [Auto Start]

Turns the projector on automatically when the power cable is inserted into an active power outlet. This eliminates the need to always use the POWER button on the remote control or projector cabinet.
To use the Auto Start function, you must first press the main power switch to the position “On” (I) before plugging the power cable.

Enabling Power Management [Power Management]

When this option is selected you can enable the projector to automatically turn off (at the selected time: 5 min., 10 min., 20 min., 30 min.) if there is no signal received by any input.

Enabling Fan Speed Mode [Fan Mode]

This option allows you to select two modes for fan speed: Auto mode and High speed mode.

Auto ..... The built-in fans automatically run at a variable speed according to the internal temperature.
High ..... The built-in fans run at a fixed high speed.

When you wish to cool down the temperature inside the projector quickly, select [High].

NOTE: It is recommended that you select High speed mode if you continue to use the projector for consecutive days.

Selecting Default Source [Default Source Select]

You can set the projector to default to any one of its inputs each time the projector is turned on.

Last ..... Sets the projector to default to the previous or last active input each time the projector is turned on.
Auto ..... Searches for an active source in order of Computer 1 → Computer 2 (Digital) → Computer 2 (Analog) → Video → S-Video → Computer 1 and displays the first found source.
NOTE The VT590, VT490, VT59 and VT49 will search for an active source in order of Computer → Video → S-Video → Computer and displays the first found source.
Computer 1 ..... Displays the RGB source from the COMPUTER 1 IN connector every time the projector is started up. (VT695/VT595 only)
Computer 2 (Digital) ... Displays the DVI digital source from the COMPUTER 2 IN connector every time the projector is started up. (VT695/VT595 only)
Computer 2 (Analog) .. Displays the RGB source from the COMPUTER 2 IN connector every time the projector is started up. (VT695/VT595 only)
Computer ..... Displays the RGB source from the COMPUTER IN connector every time the projector is started up. (VT590/VT490/VT59/VT49 only)
Video ..... Displays the Video source from the VIDEO IN connector every time the projector is started up.
S-Video ..... Displays the Video source from the S-VIDEO IN connector every time the projector is started up.

Selecting Signal Format [Signal Select]

[Computer *],[Computer 1],[Computer 2 (Analog)]
Allows you to choose [Computer *], [Computer 1], or [Computer 2 (Analog)] for an RGB source such as a computer, or [Component] for a component video source such as a DVD player. Normally select [RGB/Component] and the projector automatically detects a component signal. However there may be some component signals that the projector is unable to detect. If this is the case, select [Component].
*[Computer]: VT590, VT490, VT59 and VT49 only

[Video & S-Video System Select]
This feature enables you to select composite video standards automatically or manually.
Normally select [Auto] and the projector will automatically detect the video standard.
In the case where the projector has difficulty detecting the video standard, select the appropriate video standard from the menu.
This must be done for Video and S-Video respectively.

Enabling the deinterlace [Deinterlace]

Turns on or off the deinterlace function for a telecine signal.

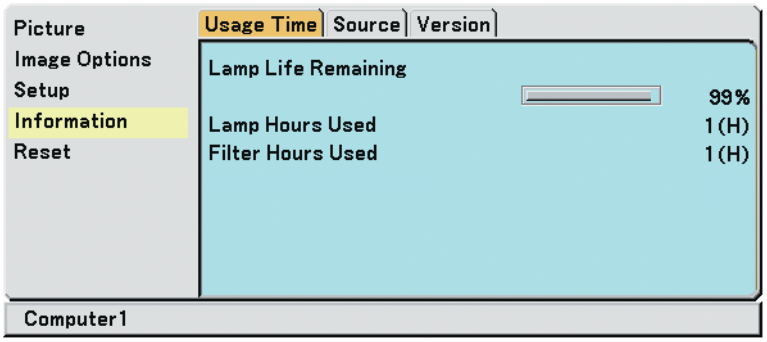
On ..... Default standard setting.
Off ..... Select this option if there is any jitter or artifacts in video.

NOTE: This feature is not available for RGB, 480p, 576p and HDTV signals.

❼ Menu Descriptions & Functions [Information]

Displays the status of the current signal and lamp usage. This item has three pages. The information included is as follows:

[Usage Time]



[Lamp Life Remaining] (%)*
[Lamp Hours Used] (H)
[Filter Hours Used] (H)

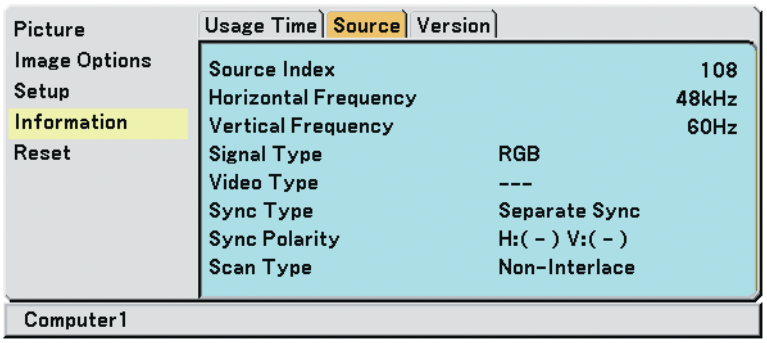
* The progress indicator shows the percentage of remaining bulb life.

The value informs you of the amount of lamp usage. When the remaining lamp time reaches 0, the Remaining Lamp Time bar indicator changes from 0% to 100 Hours and starts counting down.

If the remaining lamp time reaches 0 hours, the projector will not turn on regardless of whether the lamp mode is set to Normal or Eco.

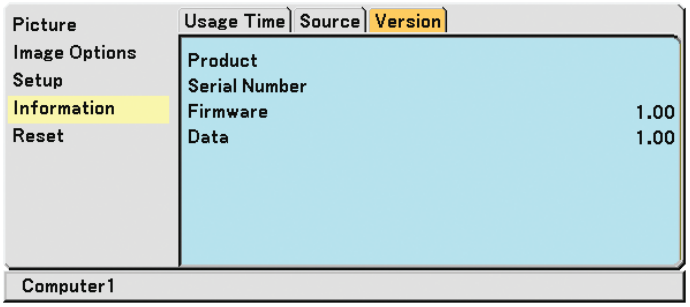
Model	Lamp life(H)		Replacement lamp
	Normal	Eco	
VT695/VT595/ VT590/VT490	2000	3000	VT85LP
VT59/VT49	3000	4000	VT80LP

[Source]



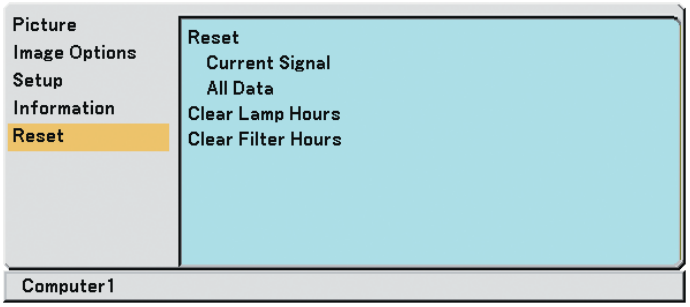
[Source Index] [Horizontal Frequency]
[Vertical Frequency] [Signal Type]
[Video Type] [Sync Type]
[Sync Polarity] [Scan Type]

[Version]



[Product] [Firmware] Version
[Serial Number] [Data] Version

❽ Menu Descriptions & Functions [Reset]



Returning to Factory Default [Reset]

The Factory Default feature allows you to change adjustments and settings to the factory preset for a (all) source (s) except the following:

[Current Signal]
Resets the adjustments for the current signal to the factory preset levels.
The items that can be reset are: [Preset], [Contrast], [Brightness], [Color], [Hue], [Sharpness], [Aspect Ratio], [Horizontal], [Vertical], [Clock], [Phase] and [Video Filter].

[All Data]
Reset all the adjustments and settings for all the signals to the factory preset.
All items can be reset except [Language], [Communication Speed], [Security], [Lamp Life Remaining], [Lamp Hours Used] and [Filter Hours Used].
To reset the lamp usage time, see “Clearing Lamp Hour Meter [Clear Lamp Hours] below”.

Clearing Lamp Hour Meter [Clear Lamp Hours]

Resets the lamp clock back to zero. Selecting this option displays submenu for a confirmation. Select [Yes] and press the ENTER button.

NOTE: Elapsed time of the lamp use will not be affected even when [Reset] is done from the menu.

NOTE: The projector will turn off and go into standby mode after 2100 hours (up to 3100* hours in Eco mode) of service. If this happens, press the HELP button on the remote control for ten seconds to reset the lamp clock back to zero. Do this only after replacing the lamp. * VT59 and VT49: 3100 hours (up to 4100 hours in Eco mode).*

Clearing the Filter Usage Hours [Clear Filter Hours]

Resets the filter usage back to zero. Selecting this option displays submenu for a confirmation. Select [Yes] and press the ENTER button.

NOTE: Elapsed time of the filter use will not be affected even when [Reset] is done from the menu.

6. Maintenance

This section describes the simple maintenance procedures you should follow to clean the filters and replace the lamp.

❶ Cleaning or Replacing the Filters

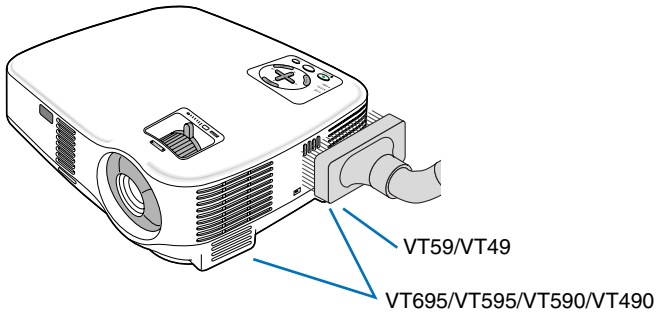
The air-filter sponge keeps dust and dirt from getting inside the projector and should be cleaned after every 100 hours of operation (more often in dusty conditions). If the filter is dirty or clogged, your projector may overheat.

CAUTION

- Turn off the projector, turn off the main power switch and unplug the projector before replacing the filters.
- Only clean the outside of the filter cover with a vacuum cleaner.
- Do not attempt to operate the projector without the filter cover.

To clean the air-filter:

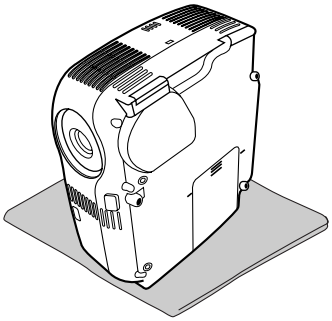
Vacuum the filter-through the filter cover.

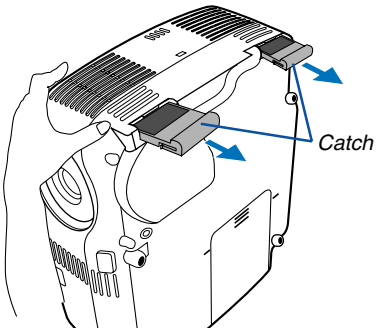


To replace the filter (sponge):

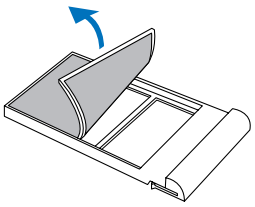
1. Remove the filter cover by pushing down on the catch of the cover until you feel it detach.

NOTE: The VT695/VT595/VT590/VT490 have two filters; the VT59 and VT49 have one filter only.

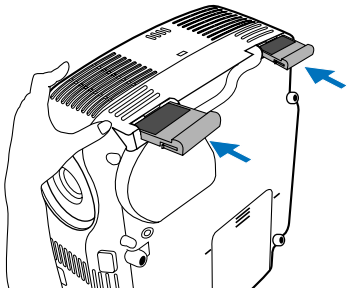




2. Gently peel off the filter (sponge) and replace it with the new one.



3. Reinstall the new filter cover.



4. Clear the filter hours used.

To reset the filter usage time, from the menu, select [Reset] → [Clear Filter Hours].
(→page 49 for resetting the filter usage time.)

NOTE: Do not wash the filter with soap and water. Soap and water will damage the filter membrane. Before replacing the filter, remove dust and dirt from the projector cabinet. Keep out dust and dirt during filter replacement.

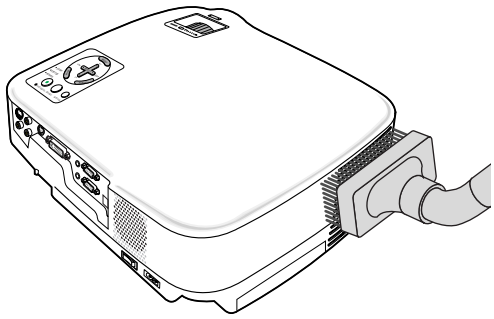
NOTE: When you replace the lamp, it is also wise to replace the filter. The filter comes in the same package with your replacement lamp.

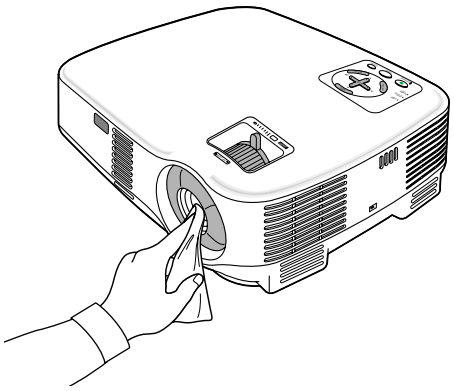
❷ Cleaning the Cabinet and the Lens

1. Turn off the projector before cleaning.

2. Clean the cabinet periodically with a damp cloth. If heavily soiled, use a mild detergent. Never use strong detergents or solvents such as alcohol or thinner.

3. Use a blower or lens paper to clean the lens, and be careful not to scratch or mar the lens.





❸ Replacing the Lamp

After your lamp has been operating for 2000*1 hours (up to 3000*1 hours in Eco mode) or longer, the LAMP indicator in the cabinet will blink red and the message **[The lamp has reached the end of its usable life. Please replace the lamp.]** *2 will appear. Even though the lamp may still be working, replace it at 2000*1 (up to 3000*1 hours in Eco mode) hours to maintain optimal projector performance. After replacing the lamp, be sure to clear the lamp hour meter. (→ page 49)

CAUTION

- DO NOT TOUCH THE LAMP immediately after it has been used. It will be extremely hot. Turn the projector off, wait 30 seconds, turn off the main power switch and then disconnect the power cable. Allow at least one hour for the lamp to cool before handling.
- DO NOT REMOVE ANY SCREWS except two lamp case screws. You could receive an electric shock.
- Do not break the glass on the lamp housing.

  Keep finger prints off the glass surface on the lamp housing. Leaving finger prints on the glass surface might cause an unwanted shadow and poor picture quality.
- The projector will turn off and go into standby mode after 2100*1 (up to 3100*1 hours in Eco mode) hours of service. If this happens, be sure to replace the lamp. If you continue to use the lamp after 2000*1 hours (up to 3000*1 hours in Eco mode) of use, the lamp bulb may shatter, and pieces of glass may be scattered in the lamp case. Do not touch them as the pieces of glass may cause injury. If this happens, contact your NEC dealer for lamp replacement.

**1 NOTE: Lamp life for VT59/VT49 is 3000 hours in Normal mode and 4000 hours in Eco mode.*
The projector will turn off and go into standby mode after 3100 (up to 4100 hours in Eco mode) hours of service.

**2 NOTE: This message will be displayed under the following conditions:*
- *for one minute after the projector has been powered on*
- *when the POWER ON/STAND BY button on the projector cabinet or the POWER OFF button on the remote control is pressed*

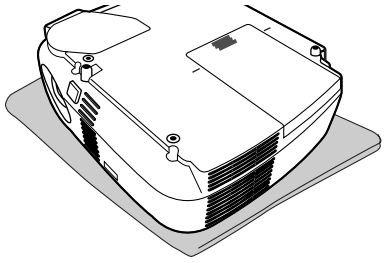
To turn off the message, press any button on the projector cabinet or the remote control.

To replace the lamp:

Optional lamp and tools needed for replacement:

- Replacement lamp VT85LP (VT695/VT595/VT590/VT490) or VT80LP (VT59/VT49)

1. Place the projector on a soft cloth and turn it over to access the lamp cover on the bottom.

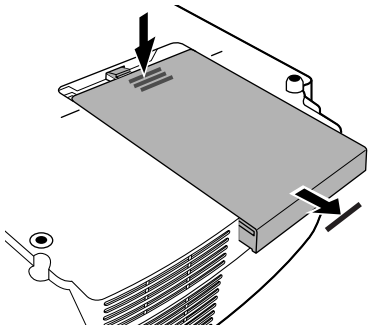


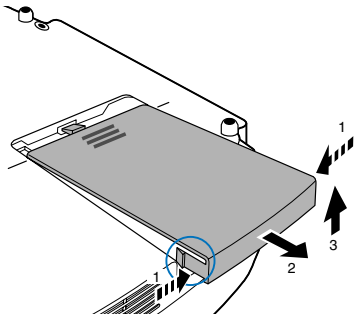
2. Remove the lamp cover.

(1) Press firmly and slide the lamp cover by 1 cm (0.4")

• Do not force to pull the lamp cover

(2) Push to release two catches on both sides and slide the lamp cover off.

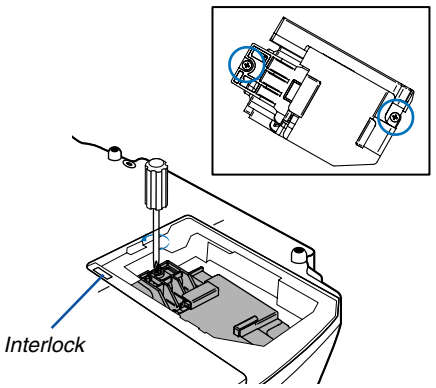


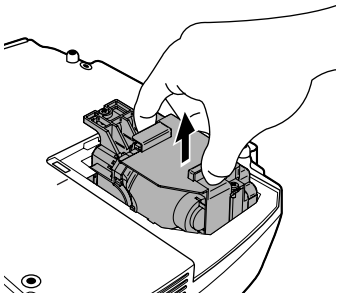


3. Remove the lamp housing.

(1) Loosen the two screws securing the lamp housing until the phillips screwdriver goes into a freewheeling condition. The two screws are not removable.

(2) Remove the lamp housing by holding it.





NOTE: There is an interlock on this case to prevent the risk of electrical shock. Do not attempt to circumvent this interlock.

4. Install a new lamp housing.

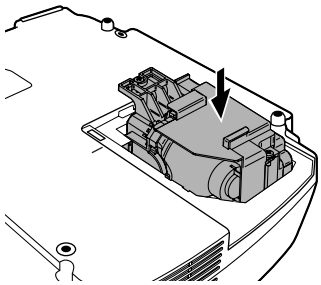
(1) Insert a new lamp housing until the lamp housing is plugged into the socket.

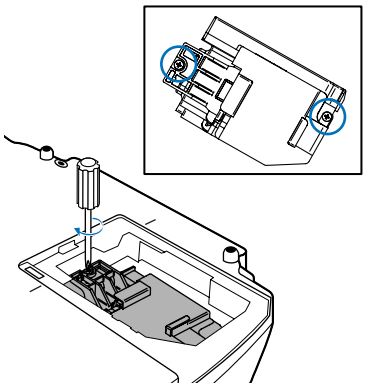
CAUTION

Do not use a lamp other than the NEC replacement lamp VT85LP (VT695/VT595/VT590/VT490) or VT80LP (VT59/VT49). Order this from your NEC dealer.

(2) Secure it in place with the two screws.

Be sure to tighten the screws.

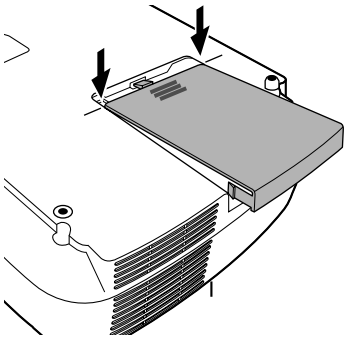


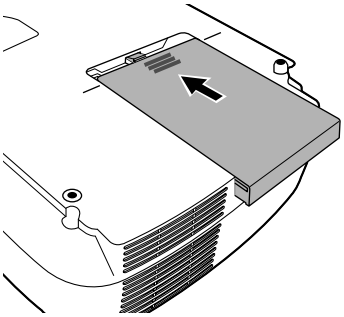


5. Reattach the lamp cover.

(1) Place the lamp cover, aligning it with the guiding line.

(2) Slide the lamp cover back until it snaps into place.





6. Connect the supplied power cable, turn on the Main Power switch and turn on the projector.

7. Finally, select the menu → [Reset] → [Clear Lamp Hours] to reset the lamp usage hours.

NOTE: When the lamp exceeds 2100 hours (up to 3100* hours in Eco mode) of service, the projector cannot turn on and the menu is not displayed.*
If this happens, press the HELP button on the remote control for ten seconds to reset the lamp clock back to zero.
When the lamp time clock is reset to zero, the LAMP indicator goes out.
** VT59 and VT49: 3100 hours (up to 4100 hours in Eco mode).*

7. Appendix

❶ Troubleshooting

This section helps you resolve problems you may encounter while setting up or using the projector.

Indicator Messages

Power Indicator

Indicator Condition			Projector Condition	Note
Off			The main power is off	–
Blinking light	Green	0.5 sec On, 0.5 sec Off	The projector is getting ready to turn on.	Wait for a moment.
		2.5 sec On, 0.5 sec Off	Off Timer is enabled.	–
	Orange	0.5 sec On, 0.5 sec Off	The projector is cooling down.	Wait for a moment.
Steady light	Green		The projector is turned on.	–
	Orange		The projector is in Standby.	–

Status Indicator

Indicator Condition			Projector Condition	Note
Off			Normal	–
Blinking light	Red	1 cycle (0.5 sec On, 2.5 sec Off)	Lamp cover error or lamp housing error	Replace the lamp cover or lamp housing correctly.
		2 cycle (0.5 sec On, 0.5 sec Off)	Temperature error	The projector is overheated. Move the projector to a cooler location.
		4 cycle (0.5 sec On, 0.5 sec Off)	Fan error	Fans will not work correctly.
		6 cycle (0.5 sec On, 0.5 sec Off)	Lamp error	Lamp fails to light. Wait a full minute and then turn on again.
	Green		Re-firing the lamp (The projector is cooling down.)	The projector is re-firing. Wait for a moment.
Steady light	Orange		Cabinet button is locked	You have pressed cabinet button when Cabinet Button is locked.

Lamp Indicator

Indicator Condition		Projector Condition	Note
Off		Normal	–
Blinking light	Red	Lamp has reached its end of life. Lamp replacement message will be displayed.	Replace the lamp.
Steady light	Red	Lamp has been used beyond its limit. The projector will not turn on until the lamp is replaced.	Replace the lamp.
	Green	Lamp mode is set to Eco mode	–

Over-Temperature Protection

If the temperature inside the projector rises too high, the over-temperature protector will automatically turn off the lamp with the STATUS indicator blinking (2-cycle On and Off.)
Should this happen, do the following:

- Unplug the power cable after the cooling fans stop.
- Move the projector to a cooler location if the room where you are presenting is particularly too warm.
- Clean the ventilation holes if they are clogged with dust.
- Wait about 60 minutes until the inside of the projector becomes cool enough.

Common Problems & Solutions (→ "Power/Status/Lamp Indicator" on page 55.)

Problem	Check These Items
Does not turn on	• Check that the power cable is plugged in and that the power button on the projector cabinet or the remote control is on. (→ pages 19 and 20) • Ensure that the lamp cover is installed correctly. (→ page 54) • Check to see if the projector has overheated. If there is insufficient ventilation around the projector or if the room where you are presenting is particularly warm, move the projector to a cooler location. • Check to see if the lamp usage exceeds 2100* hours (up to 3100* hours : Eco mode). If so, replace the lamp. After replacing the lamp, reset the lamp hours used. (→ page 49) * VT59 and VT49: 3100 hours (up to 4100 hours in Eco mode) • The lamp may fail to light. Wait a full minute and then turn on the power again.
Will turn off	• Ensure that the Power Management or Off Timer is off. (→ page 46)
No picture	• Use the COMPUTER, the VIDEO or the S-VIDEO button on the remote control to select your source (Computer, Video or S-Video). (→ page 22) If there is still no picture, press the button again. • Ensure your cables are connected properly. • Use menus to adjust the brightness and contrast. (→ page 42) • Remove the lens cap. • Reset the settings or adjustments to factory preset levels using the [Reset] in the Menu. (→ page 49) • Enter your registered keyword if the Security function is enabled. (→ page 31) • Be sure to connect the projector and notebook PC while the projector is in standby mode and before turning on the power to the notebook PC. In most cases the output signal from the notebook PC is not turned on unless connected to the projector before being powered up. * If the screen goes blank while using your remote control, it may be the result of the computer's screen-saver or power management software. • See also the next page.
Picture suddenly becomes dark	• When one of the following happens, the Lamp mode automatically changes from Normal to Eco. * When there are no signals → To return to the Normal mode, select another available source. * When the room where you' re presenting is particularly warm → Move the projector to a cooler location, or set [Fan Mode] to [High].
Color tone or hue is unusual	• Check if an appropriate color is selected in [Wall Color]. If so, select an appropriate option. (→ page 44) • Adjust [Hue] in [Picture]. (→ page 42)
Image isn't square to the screen	• Reposition the projector to improve its angle to the screen. (→ page 23) • Use the Keystone correction function to correct the trapezoid distortion. (→ page 25)
Picture is blurred	• Adjust the focus. (→ page 24) • Reposition the projector to improve its angle to the screen. (→ page 23) • Ensure that the distance between the projector and screen is within the adjustment range of the lens. (→ page 11 for VT695, page 11 for VT595/VT590/VT490/VT59 and 12 for VT49) • Condensation may form on the lens if the projector is cold, brought into a warm place and is then turned on. Should this happen, let the projector stand until there is no condensation on the lens.
Image is scrolling vertically, horizontally or both	• Use the COMPUTER, the VIDEO or the S-VIDEO button on the remote control to select your source (Computer, Video or S-Video). (→ page 22) • Adjust the computer image manually with the Horizontal/Vertical in the [Image Options]. (→ page 43)
Remote control does not work	• Install new batteries.(→ page 8) • Make sure there are no obstacles between you and the projector. • Stand within 22 feet (7 m) of the projector. (→ page 8)
Indicator is lit or blinking	• See the POWER/STATUS/LAMP Indicator. (→ page 55)
Cross color in RGB mode	• Press the AUTO ADJ. button on the projector cabinet or the remote control. (→ page 27) • Adjust the computer image manually with Clock/Phase in [Image Options] in the menu. (→ page 43)

For more information contact your dealer.

If there is no picture, or the picture is not displayed correctly.

- Power on process for the projector and the PC.

  Be sure to connect the projector and notebook PC while the projector is in standby mode and before turning on the power to the notebook PC.

  In most cases the output signal from the notebook PC is not turned on unless connected to the projector before being powered up.

  NOTE: You can check the horizontal frequency of the current signal in the projector's menu under Information. If it reads "0kHz", this means there is no signal being output from the computer. (→ page 48 or go to next step)

- Enabling the computer's external display.

  Displaying an image on the notebook PC's screen does not necessarily mean it outputs a signal to the projector. When using a PC compatible laptop, a combination of function keys will enable/disable the external display. Usually, the combination of the 'Fn" key along with one of the 12 function keys gets the external display to come on or off. For example, NEC laptops use Fn + F3, while Dell laptops use Fn + F8 key combinations to toggle through external display selections.

- Non-standard signal output from the computer

  If the output signal from a notebook PC is not an industry standard, the projected image may not be displayed correctly. Should this happen, deactivate the notebook PC's LCD screen when the projector display is in use. Each notebook PC has a different way of deactivate/reactivate the local LCD screens as described in the previous step. Refer to your computer's documentation for detailed information.

- Image displayed is incorrect when using a Macintosh

  When using a Macintosh with the projector, set the DIPswitch of the Mac adapter (not supplied with the projector) according to your resolution. After setting, restart your Macintosh for the changes to take affect.

  For setting display modes other than those supported by your Macintosh and the projector, changing the DIP switch on a Mac adapter may bounce an image slightly or may display nothing. Should this happen, set the DIP switch to the 13" fixed mode and then restart your Macintosh. After that, restore the DIP switches to a displayable mode and then restart the Macintosh again.

  NOTE: A Video Adapter cable manufactured by Apple Computer is needed for a PowerBook which does not have a mini D-Sub 15-pin connector.

- Mirroring on a PowerBook

  * When using the projector with a Macintosh PowerBook, output may not be set to 1024 x 768 unless "mirroring" is off on your PowerBook. Refer to owner's manual supplied with your Macintosh computer for mirroring.

- Folders or icons are hidden on the Macintosh screen

  Folders or icons may not be seen on the screen. Should this happen, select [View] → [Arrange] from the Apple menu and arrange icons.

❷ Specifications

This section provides technical information about the VT695/VT595/VT590/VT490/VT59/VT49 projector's performance.

Model Number	**VT695/VT595/VT590/VT490/VT59/VT49**
Optical	
LCD Panel	**VT695:** 0.63" p-Si TFT active-matrix with Micro Lens Array **VT595/VT590/VT490/VT59/VT49:**0.6" p-Si TFT active-matrix with Micro Lens Array
Resolution	**VT695/VT595/VT590/VT59:** 1024 × 768 pixels* native, up to UXGA with Advanced AccuBlend **VT490/VT49:** 800 × 600 pixels* native, up to UXGA with Advanced AccuBlend
Lens	**VT695/VT595/VT590/VT490/VT59:** Manual zoom and manual focus F1.7 - 2.0 f=18.9 - 22.7 mm **VT49:** Digital zoom and manual focus F1.7 f=22.4 mm
Lamp	**VT695:** 200 W DC lamp (150W Eco mode) **VT595/VT590/VT490:** 190 W DC lamp (150W Eco mode) **VT59/VT49:** 150 W DC lamp (120W Eco mode)
Light Output**	**VT695:** 2500 lumens (approx. 75% in Eco mode) **VT595/VT590/VT490:** 2000 lumens (approx. 80% in Eco mode) **VT59/VT49:** 1600 lumens (approx. 80% in Eco mode)
Contrast Ratio	600: 1 (full white: full black)
Image Size (Diagonal)	**VT695/VT595/VT590/VT490/VT59:** 21 - 300 inches / 0.5 - 7.6 m **VT49:** 25 - 300 inches / 0.6 - 7.6 m
Projection Distance	**VT695:** 28" - 424" / 0,7 - 10,7 m **VT595/VT590/VT490/VT59:** 29" - 438" / 0,7 - 11,1 m **VT49:** 35" - 434" / 0,9 - 11,0 m
Projection Angle	**VT695/VT595/VT590/VT490/VT59:** Tele: 8.3° - 8.6°/ Wide: 9.9° - 10.3° **VT49:** 8.4° - 8.7°
Keystone Correction	+/- 30° Vertical (Auto Keystone on VT695/VT595 only)
Electrical	
Inputs	**VT695/VT595:** 1 RGB/Component (D-Sub 15 Pin), 1 RGB (Digital/Analog) (DVI-I 29 Pin, HDCP*** supported), 1 S-Video (DIN 4 Pin), 1 Video (RCA), 1 (L/R) RCA Audio, 1 Stereo Mini Audio, 1 PC Control (DIN 8 Pin) **VT590/VT490/VT59/VT49:** 1 RGB/Component (D-Sub 15 Pin), 1 S-Video (DIN 4 Pin), 1 Video (RCA), 1 (L/R) RCA Audio, 1 PC Control (DIN 8 Pin)
Outputs	1 RGB (D-Sub 15 Pin), 1 Stereo Mini Audio (VT695/VT595 only)
Video Compatibility	NTSC, NTSC4.43, PAL, PAL-60, PAL-N, PAL-M, SECAM, HDTV: 1080i, 1080i/50Hz, 720p, 576p, 480p, 480i/60Hz
Scan Rate	Horizontal: 15 kHz to 100 kHz (RGB: 24 kHz or over) Vertical: 50 Hz to 120 Hz
Video Bandwidth	RGB: 80 MHz (-3dB)
Color Reproduction	16.7 million colors simultaneously, Full color
Horizontal Resolution	NTSC / NTSC4.43/PAL/PAL-M/PAL-N/PAL60: 540 TV lines SECAM: 300 TV lines RGB: **VT695/VT595/VT590/VT59:** 1024 dots (H)×768 dots (V), **VT490/VT49:** 800 dots (H)×600 dots (V)
External Control	RS232, IR

Sync Compatibility	Separate Sync / Composite Sync / Sync on Green / Sync on Video
Built-in Speaker	**VT695/VT595:** 5W (monaural) **VT590/VT490/VT59/VT49:** 1W (monaural)
Power Requirement	100 - 240V AC, 50 / 60 Hz
Input Current	**VT695/VT595/VT590/VT490:** 3.1 - 1.3A **VT59/VT49:** 2.4 - 1.0A
Power Consumption	**VT695:** 9W in Standby mode / 285W in Lamp Normal mode / 220W in Lamp Eco mode **VT595:** 9W in Standby mode / 270W in Lamp Normal mode / 220W in Lamp Eco mode **VT590/VT490**: 9W in Standby mode / 255W in Lamp Normal mode / 205W in Lamp Eco mode **VT59/VT49:** 9W in Standby mode / 205W in Lamp Normal mode / 170W in Lamp Eco mode
Mechanical	
Installation Orientation	Desktop/Front, Desktop/Rear, Ceiling/Front, Ceiling/Rear
Dimensions	12.2" (W) × 4.4" (H) × 10.2" (D) 309mm (W) × 112mm (H) × 258mm (D) (not including protrusions)
Weight	**VT695/VT595:** approx. 6.6 lbs / 3.0 kg **VT590/VT490:** approx. 6.4 lbs / 2.9 kg **VT59/VT49:** approx. 6.2 lbs / 2.8 kg
Environmental Considerations	Operational Temperatures : 41° to 104°F (5° to 40°C), (Eco mode selected automatically at 95°F to 104°F/35°C to 40°C) 20% to 80% humidity (non-condensing) Storage Temperatures : 14° to 122°F (-10° to 50°C), 20% to 80% humidity (non-condensing)

* Effective pixels are more than 99.99%.

** This is the light output value (lumens) when the [Preset] mode is set to [High-Bright]. If any other mode is selected as the [Preset] mode, the light output value may drop slightly.

*** What is HDCP/HDCP technology?
HDCP is an acronym for High-bandwidth Digital Content Protection. High bandwidth Digital Content Protection (HDCP) is a system for preventing illegal copying of video data sent over a Digital Visual Interface (DVI).
If you are unable to view material via the DVI input, this does not necessarily mean the VT695/VT595 projector is not functioning properly. With the implementation of HDCP, there may be cases in which certain content is protected with HDCP and might not be displayed due to the decision/intention of the HDCP community (Digital Content Protection, LLC).

Regulations

VT695/VT595/VT590/VT490/VT49: *For United States:*
UL Approved (UL 60950 - 1)
Meets FCC Class B requirements
For Canada:
UL Approved (CSA 60950 - 1)
Meets DOC Canada Class B requirements
For Australia/New Zealand:
Meets AS/NZS CISPR.22 Class B
For Europe:
Meets EMC Directive (EN55022, EN55024, EN61000-3-2, EN61000-3-3)
Meets Low Voltage Directive (EN60950 - 1, TÜV GS Approved)
CE

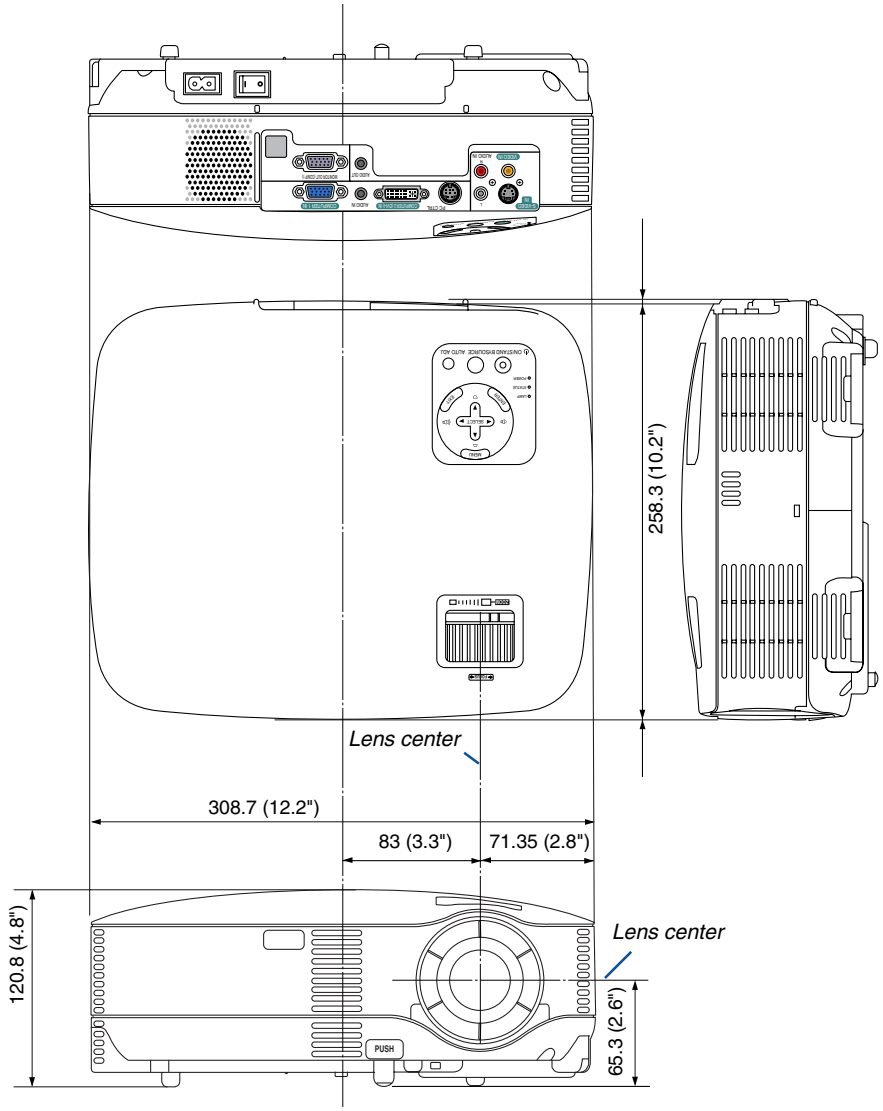
VT59:
Meets EMC Directive (EN55022, EN55024, EN61000-3-2, EN61000-3-3)
Meets Low Voltage Directive (EN60950-1, TÜV GS Approved)
CE

For additional information visit:
US : http://www.necvisualsystems.com
Europe : http://www.neceurope.com/
Global : http://www.nec-pj.com/
For information on our optional accessories, visit our website or see our brochure.

The specifications are subject to change without notice.

❸ Cabinet Dimensions

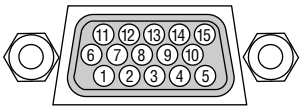
Although the appearance is slightly different, the VT695, VT595, VT590, VT490, VT59 and VT49 are the same in dimensions.



Unit: mm (inch)

❹ Pin Assignments of D-Sub COMPUTER Input Connector

Mini D-Sub 15 Pin Connector



Signal Level
Video signal : 0.7Vp-p (Analog)
Sync signal : TTL level

Pin No.	RGB Signal (Analog)	YCbCr Signal
1	Red	Cr
2	Green or Sync on Green	Y
3	Blue	Cb
4	Ground	
5	Ground	
6	Red Ground	Cr Ground
7	Green Ground	Y Ground
8	Blue Ground	Cb Ground
9	No Connection	
10	Sync Signal Ground	
11	No Connection	
12	Bi-directional DATA (SDA)*	
13	Horizontal Sync or Composite Sync	
14	Vertical Sync	
15	Data Clock*	

* Only COMPUTER 1 input connector supported on VT695/VT595.

❺ Compatible Input Signal List

Horizontal: 15KHz to 100KHz (RGB: 24KHz or over)
Vertical: 50Hz to 120Hz

			Signal	Resolution (Dots)	Frequency H. (kHz)	Refresh Rate (Hz)
			NTSC	–	15.73	59.94
			PAL	–	15.63	50.00
			PAL60	–	15.73	60.00
			SECAM	–	15.63	50.00
	D		VESA	640 × 480	31.47	59.94
	D		IBM	640 × 480	31.48	59.95
	D		MAC	640 × 480	35.00	66.67
	D		VESA	640 × 480	37.86	72.81
	D		VESA	640 × 480	37.50	75.00
	D		IBM	640 × 480	39.38	75.00
	D		VESA	640 × 480	43.27	85.01
	D		IBM	720 × 350	31.47	70.08
	D		IBM	720 × 350	39.44	87.85
	D		IBM	720 × 400	39.44	87.85
	D		VESA	800 × 600	35.16	56.25
	D		VESA	800 × 600	37.88	60.32
	D		VESA	800 × 600	48.08	72.19
	D		VESA	800 × 600	46.88	75.00
	D		VESA	800 × 600	53.67	85.06
@	D		MAC	832 × 624	49.72	74.55
@	D		VESA	1024 × 768	48.36	60.00
@	D		VESA	1024 × 768	56.48	70.07
@	D		MAC	1024 × 768	60.24	74.93
@	D		VESA	1024 × 768	60.02	75.03
@	D		VESA	1024 × 768	68.68	85.00
@	D	#	VESA	1152 × 864	67.50	75.00
@	D	#	MAC	1152 × 870	68.68	75.06
@	D	#	VESA	1280 × 960	60.00	60.00
@		#		1280 × 960	75.00	75.00
@		#		1280 × 960	85.94	85.00
@	D	#	VESA	1280 × 1024	63.98	60.02
@	D	#	MAC	1280 × 1024	64.30	60.38
@		#	MAC	1280 × 1024	69.87	65.18
@		#	VESA	1280 × 1024	79.98	75.02
@		#	VESA	1280 × 1024	91.15	85.02
@		#	VESA	1400 × 1050	63.98	60.02
@		#	VESA	1600 × 1200	75.00	60.00
@		#	VESA	1600 × 1200	81.25	65.00
@		#	VESA	1600 × 1200	87.50	70.00
@		#	VESA	1600 × 1200	93.75	75.00
			SDTV(576i)	–	15.63	50.00 Interlace
	D		SDTV(576p)	–	31.25	50.00 Progressive
@	D	#	HDTV (1080i)	1920 × 1080	33.75	60.00 Interlace
@	D	#	HDTV (1080i)	1920 × 1080	28.13	50.00 Interlace
@	D	#	HDTV (720p)	1280 × 720	45.00	60.00 Progressive
	D		SDTV (480p)	–	31.47	59.94 Progressive
			DVD YCbCr	–	15.73	59.94 Interlaced
			DVD YCbCr	–	15.63	50.00 Interlaced

: Images in above flagged with # are compressed with Advanced AccuBlend on VT695/VT595/ VT590/VT59.
D : Images in above flagged with “D” are supported by the DVI digital signals on VT695/VT595.
@ : Images in above flagged with @ are compressed with Advanced AccuBlend on VT490/VT49.

NOTE: *Some composite sync signals may not be displayed correctly.*

Signals other than those specified in the table above may not be displayed correctly. If this should happen, change the refresh rate or resolution on your PC. Refer to Display Properties help section of your PC for procedures.

UXGA (1600× 1200) is supported for separate sync signal only.

❻ PC Control Codes and Cable Connection

PC Control Codes (VT695/VT595)

Function	Code Data							
POWER ON	02H	00H	00H	00H	00H	02H		
POWER OFF	02H	01H	00H	00H	00H	03H		
INPUT SELECT COMPUTER 1	02H	03H	00H	00H	02H	01H	01H	09H
INPUT SELECT COMPUTER 2 (Digital)	02H	03H	00H	00H	02H	01H	1AH	22H
INPUT SELECT COMPUTER 2 (Analog)	02H	03H	00H	00H	02H	01H	02H	0AH
INPUT SELECT VIDEO	02H	03H	00H	00H	02H	01H	06H	0EH
INPUT SELECT S-VIDEO	02H	03H	00H	00H	02H	01H	0BH	13H
PICTURE MUTE ON	02H	10H	00H	00H	00H	12H		
PICTURE MUTE OFF	02H	11H	00H	00H	00H	13H		
SOUND MUTE ON	02H	12H	00H	00H	00H	14H		
SOUND MUTE OFF	02H	13H	00H	00H	00H	15H		

PC Control Codes (VT590/VT490/VT59/VT49)

Function	Code Data							
POWER ON	02H	00H	00H	00H	00H	02H		
POWER OFF	02H	01H	00H	00H	00H	03H		
INPUT SELECT COMPUTER	02H	03H	00H	00H	02H	01H	01H	09H
INPUT SELECT VIDEO	02H	03H	00H	00H	02H	01H	06H	0EH
INPUT SELECT S-VIDEO	02H	03H	00H	00H	02H	01H	0BH	13H
PICTURE MUTE ON	02H	10H	00H	00H	00H	12H		
PICTURE MUTE OFF	02H	11H	00H	00H	00H	13H		
SOUND MUTE ON	02H	12H	00H	00H	00H	14H		
SOUND MUTE OFF	02H	13H	00H	00H	00H	15H		

NOTE: Contact your local dealer for a full list of the PC Control Codes if needed.

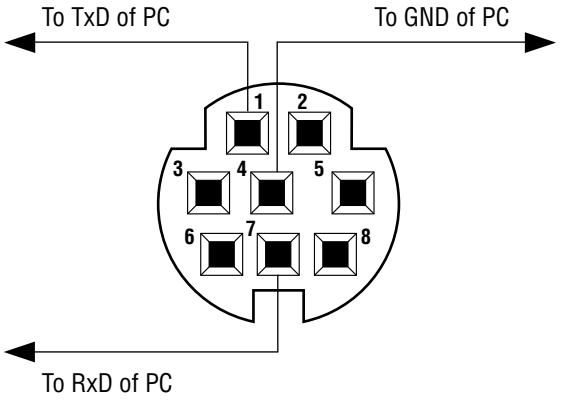
Cable Connection

Communication Protocol

- Baud rate ..... 19200 bps
- Data length ..... 8 bits
- Parity ..... No parity
- Stop bit ..... One bit
- X on/off ..... None
- Communications procedure ..... Full duplex

NOTE: Depending on the equipment, a lower baud rate may be recommended for long cable runs.

PC Control Connector (DIN-8P)



NOTE: Pins 2, 3, 5, 6 and 8 are used inside the projector.

❼ Troubleshooting Check List

Before contacting your dealer or service personnel, check the following list to be sure repairs are needed also by referring to the "Troubleshooting" section in your user's manual. This checklist below will help us solve your problem more efficiently.

* Print this page and the next page for your check.

Frequency of occurrence ☐ always ☐ sometimes (How often?_____) ☐ other (_____)

Power

- ☐ No power (POWER indicator does not light green) See also "Status Indicator (STATUS)".
  - ☐ Power cable's plug is fully inserted into the wall outlet.
  - ☐ Main power switch is pressed to the ON position.
  - ☐ Lamp cover is installed correctly .
  - ☐ Lamp Hours Used (lamp operation hours) was cleared after lamp replacement.
  - ☐ No power even though you press and hold the POWER button for 1 second.
- ☐ Shut down during operation.
  - ☐ Power cable's plug is fully inserted into the wall outlet.
  - ☐ Lamp cover is installed correctly .
  - ☐ Power Management is turned off (only models with the Power Management function).
  - ☐ Off Timer is turned off (only models with the Off Timer function).

Video and Audio

- ☐ No image is displayed from your PC or video equipment to the projector.
  - ☐ Still no image even though you connect the projector to the PC first, then start the PC.
  - ☐ Enabling your notebook PC's signal output to the projector.
    - *A combination of function keys will enable/disable the external display. Usually, the combination of the "Fn" key along with one of the 12 function keys turns the external display on or off.*
  - ☐ No image (blue or black background, no display).
  - ☐ Still no image even though you press the AUTO ADJUST button.
  - ☐ Still no image even though you carry out [Reset] in the projector's menu.
  - ☐ Signal cable's plug is fully inserted into the input connector
  - ☐ A message appears on the screen. (_____)
  - ☐ The source connected to the projector is active and available.
  - ☐ Still no image even though you adjust the brightness and/or the contrast.
  - ☐ Input source's resolution and frequency are supported by the projector.
- ☐ Image is too dark.
  - ☐ Remains unchanged even though you adjust the brightness and/or the contrast.
- ☐ Image is distorted.
  - ☐ Image appears to be trapezoidal (unchanged even though you carry out the [Keystone] adjustment).
- ☐ Parts of the image are lost.
  - ☐ Still unchanged even though you press the AUTO ADJUST button.
  - ☐ Still unchanged even though you carry out [Reset] in the projector's menu.
- ☐ Image is shifted in the vertical or horizontal direction.
  - ☐ Horizontal and vertical positions are correctly adjusted on a computer signal.
  - ☐ Input source's resolution and frequency are supported by the projector.
  - ☐ Some pixels are lost.
- ☐ Image is flickering.
  - ☐ Still unchanged even though you press the AUTO ADJUST button.
  - ☐ Still unchanged even though you carry out [Reset] in the projector's menu.
  - ☐ Image shows flickering or color drift on a computer signal.
- ☐ Image appears blurry or out of focus.
  - ☐ Still unchanged even though you checked the signal's resolution on PC and changed it to projector's native resolution.
  - ☐ Still unchanged even though you adjusted the focus.
- ☐ No sound.
  - ☐ Audio cable is correctly connected to the audio input of the projector.
  - ☐ Still unchanged even though you adjusted the volume level.
  - ☐ AUDIO OUT is connected to your audio equipment (only models with the AUDIO OUT connector).

Other

- ☐ Remote control does not work.
  - ☐ No obstacles between the sensor of the projector and the remote control.
  - ☐ Projector is placed near a fluorescent light that can disturb the infrared remote controls.
  - ☐ Batteries are new and are not reversed in installation.
- ☐ Buttons on the projector cabinet do not work (only models with the Key Lock function).
  - ☐ Control Panel Lock is not turned on or is disabled in the menu.
  - ☐ Still unchanged even though you press and hold the EXIT button for a minimum of 10 seconds.

In the space below please describe your problem in detail.

Information on application and environment where your projector is used

Projector

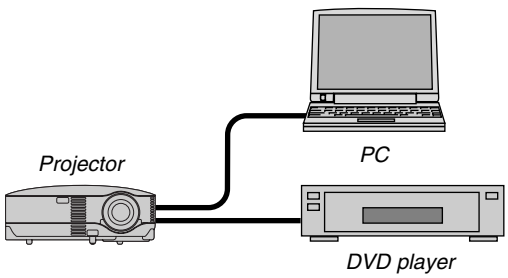
Model number:
Serial No.:
Date of purchase:
Lamp operating time (hours):
Lamp Mode: ☐ Normal ☐ Eco
Information on input signal:
Horizontal synch frequency [ ] kHz
Vertical synch frequency [ ] Hz
Synch polarity H ☐ (+) ☐ (–)
V ☐ (+) ☐ (–)
Synch type ☐ Separate ☐ Composite
☐ Sync on Green
STATUS Indicator:
Steady light ☐ Orange ☐ Green
Flashing light [ ] cycles
Remote control model number:

Installation environment

Screen size: inch
Screen type: ☐ White matte ☐ Beads ☐ Polarization
☐ Wide angle ☐ High contrast
Throw distance: feet/inch/m
Orientation: ☐ Ceiling mount ☐ Desktop
Power outlet connection:
☐ Connected directly to wall outlet
☐ Connected to power cord extender or other (the number of connected equipment_____)
☐ Connected to a power cord reel or other (the number of connected equipment_____)

Computer

Manufacturer:
Model number:
Notebook PC ☐ / Desktop ☐
Native resolution:
Refresh rate:
Video adapter:
Other:



Signal cable

NEC standard or other manufacturer's cable?
Model number: Length: inch/m
Distribution amplifier
Model number:
Switcher
Model number:
Adapter
Model number:

Video equipment

VCR, DVD player, Video camera, Video game or other
Manufacturer:
Model number:

8 TravelCare Guide

TravelCare - a service for international travelers

This product is eligible for "TravelCare", NEC's unique international warranty.
Please note that TravelCare coverage differs in part from coverage under the warranty included with the product.

Services offered with TravelCare

This warranty allows customers to receive service on their product at the NEC and NEC-designated service stations in the countries listed herein when temporarily traveling internationally for business or pleasure.
For details on services offered by the different service stations, please refer to the "List of TravelCare Outlets" below.

1 Repair services

The product will be repaired and delivered within 10 business days, not including shipping time.
During the term of warranty, the cost of maintenance parts, labor costs for repairs and shipping costs within the service station's coverage area are covered by the warranty.

2 Replacement product rental service

If the customer desires, he or she can rent a replacement product while the original product is being repaired.
Fee: US$200 for 12 days
This fee must be paid at the local service station in cash or credit card.
The US$200 rental fee is non-refundable even if the customer rents it less than 12 days before returning.
The replacement product will be delivered within 3 business days.
If the customer did not return the replacement product within 12 days, the customer will be charged the price of the unit.
If the customer returned the replacement product in a faulty or damaged condition, the repair cost will be charged to the customer.
Note that this service is not offered in all countries and regions. Please refer to the "List of TravelCare Outlets".
In addition, this replacement product rental service is not offered after the product's warranty has expired.

Term of warranty

1

a. Upon presentation of the warranty or receipt received upon purchase:

Valid for the term indicated on the warranty or the normal term of warranty for the country of purchase.

b. When only the product is brought in:

Valid for a period of within 14 months of the date of manufacture indicated by the serial number attached to the product.

2 When a product whose term of warranty is expired is brought in:

Repairs will be offered for a fee. In this case the customer is not eligible for the replacement product rental service.

3 In the following cases, repairs may be charged, even if the product's warranty is still in effect:

1) If the term of warranty, model name, serial number and name of the store of purchase are not indicated on the warranty or have been altered.

2) Problems or damage caused by dropping or shocks during shipment or movement by the customer or by improper handling by the customers.

3) Problems or damage caused by improper usage or unwarrantable alterations or repairs by the customer.

4) Problems or damage caused by fire, salt damage, gas damage, earthquakes, lightning damage, storm or flood damage or other natural disasters or such external factors as dust, cigarette smoke, abnormal voltage, etc.

5) Problems or damage caused by use in hot or humid places, in vehicles, boats or ships, etc.

6) Problems or damage caused by expendable supplies or devices connected to the product other than those designated by NEC.

7) Problems caused by natural consumption, wear or deterioration of parts under normal usage conditions.

8) Problems or damage to lamps and other expendable supplies, included parts or optional parts.

9) Other conditions stipulated in the warranty included with the product also apply.

NOTE: The product can be used overseas with voltages indicated in the rating label on the product by using a power cable suited for the standards and power source voltage of the country in which the product is being used.

List of TravelCare Outlets

This list applies as of July 1, 2006.
For the most up-to-date information, please refer to the websites of the service stations in the various countries on the List of TravelCare Outlets or to the NEC website at http://www.nec-pj.com.

In Europe

NEC Europe, Ltd. / European Technical Centre
Address: Unit G, Stafford Park 12, Telford TF3 3BJ, U.K.
Telephone: +44 1952 237000
Fax Line: +44 1952 237006
Email Address: AFR@uk.neceur.com
WEB Address: http://www.neceur.com

(Regions Covered)
EU: Austria*, Belgium*, Denmark*, Finland*, France*, Germany*, Greece*, Ireland*, Italy*, Luxembourg*, The Netherlands*, Portugal*, Spain*, Sweden* and the United Kingdom*
EEA: Norway*, Iceland and Liechtenstein

In North America

NEC Corporation of America
Address: 1250 N. Arlington Heights Road, Itasca, Illinois 60143, U.S.A.
Telephone: +1 800 836 0655
Fax Line: +1 800 356 2415
Email Address: vsd.tech-support@necsam.com
WEB Address: http://www.necvisualsystems.com

(Regions Covered)
U.S.A. *, Canada*

In Oceania

NEC Australia Pty., Ltd.
Address:
New South Wales;
184 Milperra Road, Reversby NSW 2212
Telephone: +61 2 9780 8688 Fax Line: +61 2 9780 8659
Victoria;
Unit 1/6 Garden Road, Clayton VIC 3168
Telephone: +61 3 8562 6245 Fax Line: +61 3 8562 6220
Newcastle;
120 Parry Street Newcastle West NSW 2300
Telephone: +61 2 4926 2466
Queensland;
Unit 4/305 Montague Road West End QLD 4101
Telephone: +61 7 3840 5858 Fax Line: +61 7 3840 5866
Goldcoast QLD;
Shop1 48 Ferry Road Southport QLD 4215
Telephone: +61 7 5591 3670
South Australia;
84A Richmond Road, Keswick 5035
Telephone: +61 8 8375 5707 Fax Line: +61 8 8375 5757
Western Australia;
45 Sarich Court Osborne Park WA 6017
Telephone: +61 8 9445 5901 Fax Line: +61 8 9445 5999

WEB Address: http://www.nec.com.au

(Regions Covered)
Australia*, New Zealand

In Asia and Middle East

NEC Viewtechnology, Ltd.
Address: 686-1, Nishioi, Oi-Machi, Ashigarakami-Gun, Kanagawa 258-0017, Japan
Telephone: +81 465 85 2369
Fax Line: +81 465 85 2393
Email Address: support_pjweb@nevt.nec.co.jp
WEB Address: http://www.nec-pj.com

(Regions Covered)
Japan*

NEC Hong Kong Ltd.
Address: 25/F.,The Metropolis Tower, 10 Metropolis Drive, Hunghom, Kowloon, Hong Kong
Telephone: +852 2369 0335
Fax Line: +852 2795 6618
Email Address: nechksc@nechk.nec.com.hk
esmond_au@nechk.nec.com.hk
WEB Address: http://www.nec.com.hk

(Regions Covered)
Hong Kong

NEC Taiwan Ltd.
Address: 7F, No.167, SEC.2, Nan King East Road, Taipei, Taiwan, R.O.C.
Telephone: +886 2 8500 1714
Fax Line: +886 2 8500 1420
Email Address: chenguanfu@nec.com.tw
WEB Address: http://www.nec.com.tw

(Regions Covered)
Taiwan

NEC Solutions Asia Pacific Pte. Ltd
Address: 401 Commonwealth Drive, #07-02, Haw Par Technocentre, Singapore 149598
Telephone: +65 6 273 8333
Fax Line: +65 6 274 2226
Email Address: tehgh@rsc.ap.nec.com.sg
WEB Address: http://www.nec.com.sg/ap

(Regions Covered)
Singapore

NEC Systems Integration Malaysia Sdn Bhd
Address: Ground Floor, Menara TA One, 22, Jalan P. Ramlee, 50250 Kuala Lumpur, Malaysia
Telephone: +6 03 2178 3600 (ISDN)
Fax Line: +6 03 2178 3789
Email Address: necare@nsm.nec.co.jp
WEB Address: http://www.necarecenter.com

(Regions Covered)
Malaysia

Tele Service Co., Ltd.
Address: 2nd Fl., Ire B/D. #2, 4Ga, Yangpyeng-Dong, Youngdeungpo-Gu, Seoul, Korea 150-967
Telephone: +82 2 2163 4193
Fax Line: +82 2 2163 4196
Email Address: moneybear@hyosung.com

(Regions Covered)
South Korea

Lenso Communication Co., Ltd.
Address: 292 Lenso House 4, 1st Floor, Srinakarin Road, Huamark, Bangkapi, Bangkok 10240, Thailand
Telephone: +66 2 375 2425
Fax Line: +66 2 375 2434
Email Address: pattara@lenso.com
WEB Address: http://www.lenso.com

(Regions Covered)
Thailand

ABBA Electronics L.L.C.
Address: Tariq Bin Ziyad Road, P.O.Box 327, Dubai, United Arab Emirates
Telephone: +971 4 371800
Fax Line: +971 4 364283
Email Address: ABBA@emirates.net.ae

(Regions Covered)
United Arab Emirates

Samir Photographic Supplies
Address: P.O.Box 599, Jeddah 21421, Saudi Arabia
Telephone: +966 2 6828219
Fax Line: +966 2 6830820
Email Address: asif@samir-photo.com

Riyadh
Address: P.O.Box 5519, Riyadh 11432, Saudi Arabia
Telephone: +966 1 4645064
Fax Line: +966 1 4657912
Email Address: bhimji@samir-photo.com

Alkhobar
Address: P.O.Box 238, Alkhobar 31952, Saudi Arabia
Telephone: +966 3 8942674
Fax Line: +966 3 8948162
Email Address: chamsedin@samir-photo.com

(Regions Covered)
Saudi Arabia

NOTE: In countries designated with an asterisk(*), replacement product rental service are offered.

Date: / / , P-1/ ,

TO: NEC or NEC's Authorized Service Station:
FM:

(Company & Name with signature)

Dear Sir (s),
I would like to apply your TravelCare Service Program based on attached registration and qualification sheet and agree with your following conditions, and also the Service fee will be charged to my credit card account, if I don't return the Loan units within the specified period. I also confirm following information is correct. Regards.

Application Sheet for TravelCare Service Program

Country, product purchased :	
User's Company Name :	
User's Company Address : Phone No., Fax No. :	
User's Name :	
User's Address :	
Phone No., Fax No. :	
Local Contact office :	
Local Contact office Address :	
Phone No., Fax No. :	
User's Model Name :	
Date of Purchase :	
Serial No. on cabinet :	
Problem of units per User :	
Required Service :	(1) Repair and Return (2) Loan unit
Requested period of Loan unit :	
Payment method :	(1) Credit Card (2) Travelers Cheque (3) Cash
In Case of Credit Card : Card No. w/Valid Date :	

Condition of your TravelCare Service Program

Enduser is requested to understand following condition of TravelCare Service Program and complete the necessary information on the application sheet.

1. Service Options:
There are 3 types of [Service] available. Enduser has to understand following condition and is required to fill in the Application Sheet.

1) Repair and Return:

   The 'Faulty unit' is sent or collected from the customer. It is repaired and returned within 10 days to the customer, excluding transport time.

   There may have a case, repair and return can't be done by NEC Authorized Service Station, because of shortage of spare parts due to same model is not sold in the territory.

2) Repair and Return with Loan: (This service is limited to some Service Stations)

   This service is offered to the Enduser, who cannot wait until their unit is repaired.

   The customer can borrow a unit for US$200 up to 12 days. Customer then sends in inoperable unit to nearest NEC Authorized Service Station for service. In order to prevent collection problem, Enduser is required to fill in Application Sheet.

   Enduser needs to confirm the availability of the Service to NEC Authorized Service Stations.

3) Loan Only:

   For this service, NEC Authorized Service Station supplies the customer with a loan unit for US$200 up to 12 days. Customer keeps the inoperable unit and when customer returns home, customer arranges to have the projector serviced in the home country.

2. Warranty Exclusions:
This program does not apply if the Projector's serial number has been defaced, modified or removed.
If, in the judgement of NEC Authorized Service Station or its agent the defects or failures result from any cause other than fair wear and tear or NEC neglect, or fault including the following without limitation:

1) Accidents, transportation, neglect, misuse, abuse, water, dust, smoke or default of or by the Customer its employees or agents or any third party;
2) Failure or fluctuation of electrical power, electrical circuitry, air conditioning, humidity control or other environmental conditions such as use it in smoking area;
3) Any fault in the attachments or associated products or components (whether or not supplied by NEC or its agents which do not form part of the Product covered by this warranty);
4) Any act of God, fire, flood, war, act of violence or any similar occurrence;
5) Any attempt by any person other than any person authorized by NEC to adjust, modify, repair, install or service the product.
6) Any Cross-border charges such as, duty, insurance, tax etc.

3. Charges for Warranty Exclusions and Out of Warranty Case:
In case faulty unit is under warranty exclusions case or under Out of Warranty period, NEC Authorized Service Station will Inform estimation of actual service cost to the Enduser with reason.

4. Dead on Arrival (DOA):
Enduser must take this issue up with their original supplier in the country of purchase.
NEC Authorized Service Station will repair the DOA unit as a Warranty repair, but will not exchange DOA unit with new units.

5. Loan Service Charges and Conditions:
Upon acceptance of this NEC Projector, Customer agrees to assume liability for this loan unit.

The current cost of use of this loan unit is US$200 for 12 calendar days. If Customer does not return the unit within the 12 calendar days, Customer will be charged the next highest cost up to and including the full list price to Credit Cards, which price will be informed by NEC Authorized Service Stations. Please see the attached listing of contacts for each country to arrange for pickup of the loan unit.

If you return to their country of origin with the loan unit, you will be charged additional freight to return the unit to the loaning country.

Thank you for your understanding of this program.

Ver. 1 09/06